

Oviparity and captive breeding in the Spotted Blacksnake, *Pseudechis guttatus* (Serpentes; Elapidae)¹

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ABSTRACT

Oviparity (egg-laying) is recorded as the mode of reproduction of the Spotted Blacksnake, *Pseudechis guttatus*, in both central and southern parts of the species range. Data are provided also on reproductive seasons, clutch sizes, incubation periods and hatchling sizes.

INTRODUCTION

The mode of reproduction in the large, highly venomous snakes of the Australian elapid genus *Pseudechis* has been the subject of much confusion. There is no doubt that the Red-Bellied Blacksnake (*P. porphyriacus*) bears live young, and in fact shows placental transfer of nutrients (Shine 1977). The Mulga Snake (*P. australis*) has been regarded as live-bearing also (McPhee 1959, Worrell 1963), although Gow (1976) noted an unconfirmed report of oviparity (egg-laying). The Spotted Blacksnake (*P. guttatus*) usually has been regarded as live-bearing (McPhee 1959, Worrell 1963; Kinghorn 1964). McPhee's (1959) record is particularly interesting, since he noted that a captive specimen "laid eight immature fertile eggs", but interpreted this as ovoviviparity (live-bearing). McPhee later (1979) reinterpreted this record as oviparity. Gow (1976) suggested that *P. guttatus* is egg-laying, but provided no specific data. The present report confirms oviparity as the mode of reproduction in captive *P. guttatus*.

P. guttatus is a large diurnal snake distributed through southeastern Queensland and northeastern New South Wales (Cogger 1979). Captive breeding records were obtained from snakes collected from both central and southern parts of the species' range (Fig. 1).

METHODS AND RESULTS

(1) *Queensland breeding record*

Both male and female snakes are of the dark ("Blue-Bellied Blacksnake")

(1) Please send reprint requests to Shine.



FIG. 1. Geographic distribution of the Spotted Blacksnake, *Pseudechis guttatus* (diagonal lines), showing location of specimens discussed in text (dots).

colour phase. The female is currently (April 1979) of snout-vent length (SVL) 90 cm, and weight 350 gm. She was collected in October 1976 from Oakey, Qld. (near Toowoomba). The male (current SVL = 91 cm, weight = 560 gm) was collected from Meandarra, Qld. (near Goondiwindi). Both snakes were maintained in Brisbane, and successful reproduction occurred in 1977 and in 1978. In 1977, the female laid 7 eggs on 16th December; 5 of these hatched after 12 weeks incubation at room temperature. In 1978, mating was observed in early December, and 10 eggs were laid on 26th December. One egg failed to develop, but the others were incubated successfully. Five eggs kept at a constant 24°C hatched after 12 weeks. The other 4 were maintained at room temperature, and hatched in 11 weeks.

Neonates were light silvery grey in colour, with black spotting and dark heads. Two specimens measured on 12 April 1979 (two weeks after hatching) had SVL's of 22.6 and 24.2 cm. Eggshells and hatchlings from both years' reproductions were deposited in the Queensland Museum (1977 breeding — eggshells J32036, hatchlings J32035; 1978 breeding — eggshells J35645, hatchlings J35570 and 35571).



FIG. 2. Hatching of *Pseudechis guttatus*. Upper = egg after initial incisions by young snake; lower = snake in process of hatching.

(2) *New South Wales breeding record*

The female snake (again, of "Blue-Bellied Blacksnake" colour phase) was collected from 20 km west of Dubbo, N.S.W., on 8 October 1977. This snake was 1.05 m in total length, and was kept in Sydney. She laid 13 eggs on 19 December 1977: two eggs died, but the other 11 were successfully incubated at 29°C. Hatching commenced on 14 February, but most neonates remained inside the shells for a further 24 hours (Fig. 2). The young snakes were silver-grey in colour, similar to the Queensland hatchlings described above. Mean total length of the 11 hatchlings was 28.1 cm (range 27.0 — 29.0 cm). The young snakes fed readily on small scincid lizards. Three of the snakes were deposited in the Australian Museum soon after hatching (numbers R77371-77373).

DISCUSSION

The Queensland and New South Wales records agree in several important respects: oviparity, dates of egg-laying, hatchling sizes, hatchling colouration and incubation period. Hence, there is unlikely to be marked geographic variation in these reproductive characteristics of *P. guttatus*. Nonetheless, we conclude this paper with an anomalous observation. One of us (N.C.) has seen an adult brown-phase *P. guttatus* under a log together with newly-born young in the field (near Forest Hill, 30 km E Toowoomba, Qld.), suggesting a live-bearing habit. The young were enclosed in transparent membranes similar to those that cover neonates of the related (live-bearing) *P. porphyriacus*. Cases of intraspecific variability in reproductive mode are rare (Tinkle and Gibbons 1977), so this apparent example deserves further study. Data on the other *Pseudechis* species for which mode of reproduction is doubtful — *P. australis*, *P. colletti* and *P. papuanus* — are also needed.

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